

Chapter 12

Nonhighway Modes

Summary Statistics from Tables in this Chapter

Source		
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	Passenger-miles, 2000	(millions)
<i>Table 12.1</i>	<i>Domestic and international air carrier</i>	708,419
<i>Table 12.2</i>	<i>General aviation</i>	14 ^a
<i>Table 12.11</i>	<i>Amtrak</i>	5,574
<i>Table 12.12</i>	<i>Commuter rail</i>	9,402
<i>Table 12.13</i>	<i>Transit rail</i>	15,200
	Freight ton-miles, 2000	(millions)
<i>Table 12.4</i>	<i>Domestic waterborne commerce</i>	646,000
<i>Table 12.8</i>	<i>Class I railroad</i>	1,465,960
	Passenger energy use, 2000	(trillion Btus)
<i>Table 12.1</i>	<i>Domestic and international air carrier</i>	2,743.1
<i>Table 12.2</i>	<i>General aviation</i>	175.2
<i>Table 12.6</i>	<i>Recreational boats</i>	311.2
<i>Table 12.11</i>	<i>Amtrak</i>	16.2
<i>Table 12.12</i>	<i>Commuter rail</i>	25.9
<i>Table 12.13</i>	<i>Transit rail</i>	47.2
	Freight energy use, 2000	(trillion Btus)
<i>Table 12.4</i>	<i>Domestic waterborne commerce</i>	327.9
<i>Table 12.8</i>	<i>Class I railroad</i>	516.0

^a 1999 data. The 2000 data are not yet available.





Table 12.1
Summary Statistics for U.S. Domestic and International Certificated Route Air Carriers (Combined Totals), 1970–2001^a

Year	Revenue aircraft-miles (millions)	Average passenger trip length ^b (miles)	Revenue passenger-miles (millions)	Available seat-miles (millions)	Available seats per aircraft ^c	Passenger load factor (percentage) ^d	Revenue cargo ton-miles (millions)	Energy use (trillion Btu) ^e	Percent domestic of total energy use (percentage)
1970	2,383	678	131,719 ^f	264,904 ^f	111	49.7% ^f	4,994	1,363.4	^g
1975	2,241	698	173,324	315,823	135	54.9%	5,944	1,283.4	^g
1980	2,924	736	267,722	448,479	148	59.7%	7,515	1,386.0	83.0%
1985	3,462	758	351,073	565,677	163	62.1%	9,048	1,701.4	80.3%
1986	3,873	767	378,923	623,073	161	60.8%	10,987	1,847.1	81.4%
1987	4,182	779	417,830	670,871	160	62.3%	13,130	1,945.9	80.0%
1988	4,355	786	437,649	696,337	160	62.9%	14,633	2,049.4	78.5%
1989	4,442	792	447,480	703,888	158	63.6%	16,347	2,087.4	77.0%
1990	4,724	803	472,236	753,211	159	62.7%	16,411	2,213.0	75.8%
1991	4,661	806	463,296	738,030	158	62.8%	16,149	2,085.2	74.5%
1992	4,899	806	493,715	772,869	158	63.9%	17,306	2,144.2	74.1%
1993	5,118	799	505,996	793,959	155	63.7%	19,083	2,169.7	74.4%
1994	5,360	787	537,506	809,240	151	66.4%	21,773	2,266.2	74.3%
1995	5,627	791	558,757	845,012	150	66.1%	23,375	2,338.6	74.0%
1996	5,855	802	596,164	859,720	147	69.3%	24,892	2,409.1	73.9%
1997	6,025	814	619,969	880,607	146	70.4%	27,610	2,514.2	73.3%
1998	6,227	812	635,517	899,851	145	70.6%	28,102	2,573.4	72.8%
1999	6,558	824	668,626	942,311	144	71.0%	28,984	2,653.1	73.3%
2000	6,944	833	708,419	980,379	141	72.3%	30,863	2,743.1	73.1%
2001	6,807	842	664,841	950,530	140	69.9%	27,882	2,599.4	72.8%
<i>Average annual percentage change</i>									
1970–2001	3.4%	0.7%	5.4%	4.2%	0.8%		5.7%	2.1%	
1991–2001	3.9%	0.4%	3.7%	2.6%	-1.2%		5.6%	2.2%	

Source:

U.S. Department of Transportation, Bureau of Transportation Statistics, *Air Carrier Traffic Statistics Monthly*, December 2001/2000, Washington, DC, pp. 1–2, and annual. 1970–76 Energy Use - Department of Transportation, Civil Aeronautics Board, *Fuel Cost and Consumption*, Washington, DC, 1981, and annual. 1977–2001 Energy Use - Department of Transportation, Bureau of Transportation Statistics, "Fuel Cost and Consumption Table," Washington, DC. (Additional resources: www.bts.gov, www.faa.gov)

^aData are for all U.S. air carriers reporting on Form 41.

^bScheduled services of domestic operations only. The average passenger trip length for international operations is more than three and a half times longer than for domestic operations.

^cAvailable seats per aircraft is calculated as the ratio of available seat-miles to revenue aircraft-miles.

^dPassenger load factor is calculated as the ratio of revenue passenger-miles to available seat-miles for scheduled and nonscheduled services.

^eEnergy use includes fuel purchased abroad for international flights.

^fScheduled services only.

^gData are not available.

General aviation includes: (1) aircraft operating under general operating and flight rules; (2) not-for-hire airplanes with a seating capacity of 20 or more or a maximum payload capacity of 6,000 lbs. or more; (3) rotocraft external load operations; (4) on-demand and commuter operations not covered under Federal Aviation Regulations Part 121; and (5) agricultural aircraft operations.

Table 12.2
Summary Statistics for General Aviation, 1970–2000

Calendar year	Total number of aircraft	Aircraft hours flown (thousands)	Intercity passenger travel (billion passenger-miles)	Energy use (trillion btu)
1970	131,700 ^a	26,030 ^b	9.1	94.4
1975	168,475	30,298	11.4	121.5
1976	177,964	31,950	12.1	130.3
1977	184,294	33,679	12.8	149.7
1978	199,178	36,844	14.1	159.4
1979	210,339	40,432	15.5	167.2
1980	211,045	41,016	14.7	169.0
1981	213,226	40,704	14.6	162.4
1982	209,779	36,457	13.1	170.5
1983	213,293	35,249	12.7	143.9
1984	220,943	36,119	13.0	148.9
1985	196,500	31,456	12.3	144.0
1986	205,300	31,782	12.4	148.0
1987	202,700	30,883	12.1	139.1
1988	196,200	31,114	12.6	148.6
1989	205,000	32,332	13.1	134.0
1990	198,000	32,096	13.0	131.9
1991	196,874	29,862	12.1	120.4
1992	185,650	26,747	10.8	104.7
1993	177,120	24,455	9.9	97.5
1994	172,935	24,092	9.8	95.3
1995	188,089	26,612	10.8	106.6
1996	191,129	26,909	12.0	111.1
1997	192,414	27,713	12.5	121.1
1998	204,710	28,100	13.1	147.4
1999	219,464	31,756	13.5	172.1
2000	217,533	30,975	^c	175.2
<i>Average annual percentage change</i>				
1970–2000	1.7%	0.6%	1.4%	2.1%
1990–2000	0.9%	-0.4%	0.3%	2.9%

Sources:

Intercity passenger-miles - Eno Foundation for Transportation, *Transportation in America 2001*, Nineteenth edition, Lansdowne, VA, 2002, p. 15, and annual.

All other- U.S. Department of Transportation, Federal Aviation Administration, *General Aviation Activity and Avionics Survey: Calendar Year 2000*, Tables 1.2, 1.5, 5.1, and annual.

(Additional resources: www.faa.gov)

^aActive fixed-wing general aviation aircraft only.

^bIncludes rotocraft.

^cData are not available.



In the early seventies, domestic waterborne commerce accounted for over 60% of total tonnage, but by 1994 foreign tonnage grew to more than half of all waterborne tonnage and has continued to grow each year since.

Table 12.3
Tonnage Statistics for Domestic and
International Waterborne Commerce, 1970–2000
(million tons shipped)

Year	Foreign and domestic total	Foreign total ^a	Domestic total ^b	Percent domestic of total
1970	1,532	581	951	62.1%
1975	1,695	749	946	55.8%
1976	1,835	856	979	53.4%
1977	1,908	935	973	51.0%
1978	2,021	946	1,075	53.2%
1979	2,073	993	1,080	52.1%
1980	1,999	921	1,077	53.9%
1981	1,942	887	1,054	54.3%
1982	1,777	820	957	53.9%
1983	1,708	751	957	56.0%
1984	1,836	803	1,033	56.3%
1985	1,788	774	1,014	56.7%
1986	1,874	837	1,037	55.3%
1987	1,967	891	1,076	54.7%
1988	2,088	976	1,112	53.3%
1989	2,140	1,038	1,103	51.5%
1990	2,164	1,042	1,122	51.8%
1991	2,092	1,014	1,079	51.6%
1992	2,132	1,037	1,095	51.4%
1993	2,128	1,060	1,068	50.2%
1994	2,215	1,116	1,099	49.6%
1995	2,240	1,147	1,093	48.8%
1996	2,284	1,183	1,101	48.2%
1997	2,334	1,221	1,113	47.7%
1998	2,339	1,245	1,094	46.8%
1999	2,323	1,261	1,062	45.6%
2000	2,462	1,392	1,070	43.5%
<i>Average annual percentage change</i>				
1970–2000	1.6%	3.0%	0.4%	
1990–2000	1.3%	2.9%	-0.5%	

Source:

U.S. Department of the Army, Corps of Engineers, *Waterborne Commerce of the United States, Calendar Year 2000*, Part 5: National Summaries, New Orleans, Louisiana, 2002, Table 1-1, p. 1-3, and annual. (Additional resources: www.wrc-ndc.usace.army.mil/ndc)

^aAll movements between the U.S. and foreign countries and between Puerto Rico and the Virgin Islands and foreign countries are classified as foreign trade.

^bAll movements between U.S. ports, continental and noncontiguous, and on the inland rivers, canals, and connecting channels of the U.S., Puerto Rico, and the Virgin Islands, excluding the Panama Canal. Beginning in 1996, fish was excluded for internal and intra port domestic traffic.



Table 12.4
Summary Statistics for Domestic Waterborne Commerce, 1970–2000

Year	Number of vessels ^a	Ton-miles (billions)	Tons shipped ^b (millions)	Average length of haul (miles)	Energy intensity (Btu/ton-mile)	Energy use (trillion Btu)
1970	25,832	596	949	628.2	545	324.8
1975	31,666	566	944	599.9	549	311.0
1976	33,204	592	976	606.3	468	277.3
1977	35,333	599	969	618.0	458	274.3
1978	35,723	827	1,072	771.6	383	316.6
1979	36,264	829	1,076	770.0	457	378.7
1980	38,792	922	1,074	856.4	358	329.8
1981	42,079	929	1,051	884.0	360	334.5
1982	42,079	886	954	929.0	310	274.9
1983	41,784	920	953	964.6	319	293.7
1984	41,784	888	1,029	862.5	346	307.3
1985	41,672	893	1,011	883.5	446	398.6
1986	40,308	873	1,033	845.3	463	404.0
1987	40,000	895	1,072	835.0	402	370.7
1988	39,192	890	1,106	804.3	361	321.3
1989	39,209	816	1,097	743.2	403	328.6
1990	39,233	834	1,118	745.7	388	323.2
1991	39,233	848	1,074	789.9	386	327.5
1992	39,210	857	1,090	785.7	398	341.0
1993	39,064	790	1,063	742.7	389	307.0
1994	39,064	815	1,093	745.5	369	300.7
1995	39,641	808	1,086	743.6	374	302.2
1996	41,104	765	1,093	699.4	412	314.9
1997	41,419	707	1,106	639.5	415	293.2
1998	42,032	673	1,087	619.0	436	293.1
1999	41,766	656	1,056	621.1	457	299.9
2000	41,354	646	1,064	606.8	508	327.9
<i>Average annual percentage change</i>						
1970–2000	1.6%	0.3%	0.4%	-0.1%	-0.2%	0.0%
1990–2000	0.5%	-2.5%	-0.5%	-2.0%	2.7%	0.1%

Source:

Number of vessels -

1970–92, 1995–2000 - U.S. Department of the Army, Corps of Engineers, "Summary of U.S. Flag Passenger and cargo vessels, 2000," New Orleans, LA, 2001, and annual.

1993–94 - U.S. Dept of the Army, Corps of Engineers, *The U.S. Waterway System-Facts*, Navigation Data Center, New Orleans, Louisiana, January 1996.

Ton-miles, tons shipped, average length of haul - U.S. Department of the Army, Corps of Engineers, *Waterborne Commerce of the United States, Calendar Year 2000* Part 5: National Summaries, New Orleans, LA, 2001, Table 1-4, pp. 1-6, 1-7, and annual.

Energy use - See Appendix A for Water Energy Use.

(Additional resources: www.wrc-ndc.usace.army.mil/ndc)

^aGrand total for self-propelled and non-self-propelled.

^bThese figures are not consistent with the figures on Table 6.4 because intra-territory tons are not included in this table. Intra-territory traffic is traffic between ports in Puerto Rico and the Virgin Islands.





Fifty-five percent of all domestic marine cargo in 2000 were energy-related products (petroleum, coal, coke). The majority of the energy-related products were shipped internally and locally (66%). Barge traffic accounted for 95.7% of all internal and local waterborne commerce.

Table 12.5
Breakdown of Domestic Marine Cargo by Commodity Class, 2000

Commodity class	Coastwise		Lakewise		Internal and local		Total domestic ^a		
	Tons shipped (millions)	Average haul ^b (miles)	Tons shipped (millions)	Average haul ^b (miles)	Tons shipped (millions)	Average haul ^b (miles)	Tons shipped (millions)	Percentage	Average haul ^b (miles)
Petroleum and products	163	1,279	2	325	200	194	365	34.3%	680
Chemicals and related products	14	1,994	^c	365	62	498	76	7.1%	769
Crude materials	14	553	88	515	133	375	234	22.0%	438
Coal and coke	14	649	20	519	186	328	221	20.7%	367
Primary manufactured goods	7	548	4	311	35	881	46	4.3%	781
Food and farm products	6	1,873	^c	980	91	1,007	97	9.1%	1,059
Manufactured equipment	9	1,822	^c	^c	12	78	21	2.0%	790
Waste and scrap	^c	0	0	0	4	77	4	0.4%	77
Unknown	^c	2,024	^c	^c	^c	^c	^c	0.0%	1,214
Total	227	1,251	114	506	723	421	1,064	100.0%	607
Barge traffic (million tons)	104		12		692		808		
Percentage by barge	45.9%		10.7%		95.7%		76.0%		

Source:

U.S. Department of the Army, Corps of Engineers, *Waterborne Commerce of the United States, Calendar Year 2000*, Part 5: National Summaries, New Orleans, Louisiana, 2002, Tables 2-1, 2-2, and 2-3, pp. 2-1—2-8, and annual.
(Additional resources: www.wrc-ndc.usace.army.mil/ndc)

Note:

Coastwise applies to domestic traffic receiving a carriage over the ocean or between the Great Lakes ports and seacoast ports when having a carriage over the ocean. Lakewise applies to traffic between United States ports on the Great Lakes. Internal applies to traffic between ports or landings wherein the entire movement takes place on inland waterways. Local applies to movements of freight within the confines of a port.

^aDoes not include intra-territory tons.

^bCalculated as ton-miles divided by tons shipped.

^cNegligible.

According to the U.S. Coast Guard there are 4,800 more recreational boats in 2000 than in 1977. Even so, recreational boat fatalities are on the decline. There were only 5.5 fatalities per 100,000 boats in 2000.

Table 12.6
Recreational Boating Statistics, 1977–2000

Year	Number of numbered boats (thousands)	Fatalities	Fatalities per 100,000 numbered boats	Energy use ^a (trillion btu)
1977	7,976	1,312	16.5	194.2
1978	8,036	1,321	16.4	195.6
1979	8,279	1,400	16.9	201.5
1980	8,578	1,360	15.9	208.8
1981	8,905	1,280	14.4	216.8
1982	9,074	1,178	13.0	220.9
1983	9,165	1,241	13.5	223.1
1984	9,420	1,063	11.3	229.3
1985	9,589	1,116	11.6	233.4
1986	9,876	1,066	10.8	240.4
1987	9,964	1,036	10.4	242.6
1988	10,363	946	9.1	252.3
1989	10,777	896	8.3	262.4
1990	10,996	865	7.9	267.7
1991	11,068	924	8.3	269.4
1992	11,132	816	7.3	271.0
1993	11,283	800	7.1	274.7
1994	11,430	784	6.9	278.2
1995	11,735	829	7.1	285.7
1996	11,878	709	6.0	289.2
1997	12,313	821	6.7	299.7
1998	12,566	815	6.5	305.9
1999	12,738	734	5.8	310.1
2000	12,782	701	5.5	311.2
<i>Average annual percentage change</i>				
1977–2000	2.1%	-2.7%	-4.7%	2.1%
1990–2000	1.5%	-2.1%	-3.6%	1.5%

Source:

U.S. Department of Transportation, United States Coast Guard, *Boating Statistics - 2000*, pp. 6, 23, and annual.

^aEnergy use estimated using the methodology developed by D.L. Greene in the report *Off-Highway Gasoline in the United States*, (DOT, FHWA, July 1986, p. 3–22) [0.95 x 205 gallons/boat x number of boats].



The Interstate Commerce Commission designates Class I railroads on the basis of annual gross revenues. In 2000, eight railroads were given this designation. The number of railroads designated as Class I has changed considerably in the last 25 years; in 1976 there were 52 railroads given Class I designation.

Table 12.7
Class I Railroad Freight Systems in the United States
Ranked by Revenue Ton-Miles, 2000

Railroad	Revenue ton-miles (billions)	Percent
Burlington Northern and Sante Fe Railway Company	492	33.6%
Union Pacific Railroad Company	485	33.1%
CSX Transportation	212	14.5%
Norfolk Southern Corporation	197	13.4%
Illinois Central Railroad Company	26	1.8%
Kansas City Southern Railway Company	20	1.4%
Soo Line Railroad Company	22	1.5%
Grand Trunk Western Railroad Inc.	11	0.8%
Total	1,465	100.0%

Source:

Association of American Railroads, *Railroad Facts*, 2001 Edition, Washington, DC, October 2001, p. 66. (Additional resources: www.aar.org)



Revenue ton-miles for Class I freight railroads was nearly 1.5 trillion in 2000. Though there are many regional and local freight railroads, the Class I freight railroads accounted for 91% of the railroad industry's freight revenue in 2000 and 71% of the industry's mileage operated..

Table 12.8
Summary Statistics for Class I Freight Railroads, 1970–2000

Year	Number of locomotives in service ^a	Number of freight cars (thousands) ^b	Train-miles (millions)	Car-miles (millions)	Tons originated ^c (millions)	Average length of haul (miles)	Revenue ton-miles (millions)	Energy intensity (Btu/ton-mile)	Energy use (trillion Btu)
1970	27,077 ^d	1,424	427	29,890	1,485	515	764,809	691	528.1
1975	27,855	1,359	403	27,656	1,395	541	754,252	687	518.3
1980	28,094	1,168	428	29,277	1,492	616	918,621	597	548.7
1981	27,421	1,111	408	27,968	1,453	626	910,169	572	521.0
1982	26,795	1,039	345	23,952	1,269	629	797,759	553	440.8
1983	25,448	1,007	346	24,358	1,293	641	828,275	525	435.1
1984	24,117	948	369	26,409	1,429	645	921,542	510	469.9
1985	22,548	867	347	24,920	1,320	664	876,984	497	436.1
1986	20,790	799	347	24,414	1,306	664	867,722	486	421.5
1987	19,647	749	361	25,627	1,372	688	943,747	456	430.3
1988	19,364	725	379	26,339	1,430	697	996,182	443	441.4
1989	19,015	682	383	26,196	1,403	723	1,013,841	437	442.6
1990	18,835	659	380	26,159	1,425	726	1,033,969	420	434.7
1991	18,344	633	375	25,628	1,383	751	1,038,875	391	405.8
1992	18,004	605	390	26,128	1,399	763	1,066,781	393	419.2
1993	18,161	587	405	26,883	1,397	794	1,109,309	389	431.6
1994	18,505	591	441	28,485	1,470	817	1,200,701	388	465.4
1995	18,812	583	458	30,383	1,550	843	1,305,688	372	485.9
1996	19,269	571	469	31,715	1,611	842	1,355,975	368	499.4
1997	19,684	568	475	31,660	1,585	851	1,348,926	370	499.7
1998	20,261	576	475	32,657	1,649	835	1,376,802	365	502.0
1999	20,256	579	490	33,851	1,717	835	1,433,461	363	520.0
2000	20,028	560	504	34,590	1,738	843	1,465,960	352	516.0
<i>Average annual percentage change</i>									
1970–2000	-1.0%	-3.1%	0.6%	0.5%	0.5%	1.7%	2.2%	-2.2%	-0.1%
1990–2000	0.6%	-1.6%	2.9%	2.8%	2.0%	1.5%	3.6%	-1.8%	1.7%

Source:

Association of American Railroads, *Railroad Facts*, 2001 Edition, Washington, DC, October 2001, pp. 27, 28, 33, 34, 36, 49, 51, 61.
(Additional resources: www.aar.org)

^aDoes not include self-powered units. From 1972 to 1979, the number of locomotives used in Amtrak passenger operations are subtracted from the total locomotives used in passenger and freight service to calculate the number of Class I locomotives in service.

^bDoes not include private or shipper-owned cars.

^cTons originated is a more accurate representation of total tonnage than revenue tons. Revenue tons often produces double-counting of loads switched between rail companies.

^dData represent total locomotives used in freight and passenger service. Separate estimates are not available.



The “other” category, which consists primarily of intermodal traffic, has grown 158% in carloads from 1974 to 2000. Coal now accounts for one quarter of all carloads.

Table 12.9
Railroad Revenue Carloads by Commodity Group, 1974 and 2000

Commodity group	Carloads (thousands)		Percent distribution		Percentage change 1974–2000
	1974	2000	1974	2000	
Coal	4,544	6,954	17.0%	25.0%	53.0%
Farm products	3,021	1,437	11.3%	5.2%	-52.4%
Chemicals and allied products	1,464	1,844	5.5%	6.6%	26.0%
Nonmetallic minerals	821	1,309	3.1%	4.7%	59.4%
Food and kindred products	1,777	1,377	6.6%	5.0%	-22.5%
Lumber and wood products	1,930	648	7.2%	2.3%	-66.4%
Metallic ores	1,910	322	7.1%	1.2%	-83.1%
Stone, clay and glass	2,428	541	9.1%	1.9%	-77.7%
Pulp, paper, and allied products	1,180	633	4.4%	2.3%	-46.4%
Petroleum products	877	541	3.3%	1.9%	-38.3%
Primary metal products	1,366	753	5.1%	2.7%	-44.9%
Waste and scrap material	889	619	3.3%	2.2%	-30.4%
Transportation equipment	1,126	1,860	4.2%	6.7%	65.2%
Others	3,451	8,925	12.9%	32.1%	158.6%
Total	26,784	27,763	100.0%	100.0%	3.7%

Source:

1974 - Association of American Railroads, *Railroad Facts*, 1976 Edition, Washington, DC, 1975, p. 26.

2000 - Association of American Railroads, *Railroad Facts*, 2001 Edition, Washington, DC,

October 2001, p. 25.

(Additional resources: www.aar.org)



The number of trailers and containers moved by railroads has increased more than four-fold from 1965 to 2000. Containerization has increased in recent years, evidenced by the 173% increase in the number of containers from 1988 to 2000. According to the 1997 Commodity Flow Survey, 5% of all freight ton-miles are rail intermodal shipments (truck/rail or rail/water). See Table 8.11 for details.

Table 12.10
Intermodal Rail Traffic, 1965–2000

Year	Trailers & containers	Trailers	Containers
1965	1,664,929	a	a
1970	2,363,200	a	a
1975	2,238,117	a	a
1980	3,059,402	a	a
1985	4,590,952	a	a
1986	4,997,229	a	a
1987	5,503,819	a	a
1988	5,779,547	3,481,020	2,298,527
1989	5,987,355	3,496,262	2,491,093
1990	6,206,782	3,451,953	2,754,829
1991	6,246,134	3,201,560	3,044,574
1992	6,627,841	3,264,597	3,363,244
1993	7,156,628	3,464,126	3,692,502
1994	8,128,228	3,752,502	4,375,726
1995 ^b	7,936,172	3,492,463	4,443,709
1996 ^b	8,143,258	3,302,128	4,841,130
1997 ^b	8,698,308	3,453,907	5,244,401
1998 ^b	8,772,663	3,353,032	5,419,631
1999 ^c	8,907,626	3,207,407	5,700,219
2000 ^c	9,176,890	2,888,630	6,288,260
<i>Average annual percentage change</i>			
1965–2000	5.0%	a	a
1990–2000	4.0%	-1.8%	8.6%

Source:

Association of American Railroads, *Railroad Facts*,
2001 edition, Washington, DC, October 2001 p. 26.
(Additional resources: www.aar.org)

^a Data are not available.

^b The Grand Trunk Western Railroad and the Soo Line Railroad Company data are excluded.

^c The Illinois Central, Grand Trunk Western Railroad and the Soo Line Railroad Company data are excluded.



The National Railroad Passenger Corporation, known as Amtrak, began operation in 1971. Though Amtrak revenue passenger-miles have grown at an average annual rate of 3.6% from 1971 to 2000, they showed a small decline in annual percentage change from 1990 to 2000.

Table 12.11
Summary Statistics for the National Railroad Passenger Corporation (Amtrak), 1971–2000

Year	Number of locomotives in service	Number of passenger cars	Train-miles (thousands)	Car-miles (thousands)	Revenue passenger-miles (millions)	Average trip length (miles)	Energy intensity (Btu per revenue passenger-mile)	Energy use (trillion Btu)
1971	^a	1,165	16,537	140,147	1,993	188	^a	^a
1975	355	1,913	30,166	253,898	3,753	224	3,677	13.8
1980	448	2,128	29,487	235,235	4,503	217	3,176	14.3
1981	398	1,830	30,380	222,753	4,397	226	2,979	13.1
1982	396	1,929	28,833	217,385	3,993	220	3,156	12.6
1983	388	1,880	28,805	223,509	4,227	223	2,957	12.5
1984	387	1,844	29,133	234,557	4,427	227	3,027	13.4
1985	382	1,818	30,038	250,642	4,785	238	2,800	13.4
1986	369	1,793	28,604	249,665	5,011	249	2,574	12.9
1987	381	1,850	29,515	261,054	5,361	259	2,537	13.6
1988	391	1,845	30,221	277,774	5,686	265	2,462	14.0
1989	312	1,742	31,000	285,255	5,859	274	2,731	16.0
1990	318	1,863	33,000	300,996	6,057	273	2,609	15.8
1991	316	1,786	34,000	312,484	6,273	285	2,503	15.7
1992	336	1,796	34,000	307,282	6,091	286	2,610	15.9
1993	360	1,853	34,936	302,739	6,199	280	2,646	16.4
1994	411	1,874	34,940	305,600	5,869	276	2,357	13.8 ^b
1995	422	1,907	31,579	282,579	5,401	266	2,590	14.0
1996	348	1,501	30,542	277,750	5,066	257	2,792	14.1
1997	292	1,572	32,000	287,760	5,166	255	2,918	15.1
1998	362	1,347	32,926	315,823	5,325	251	2,900	15.4
1999	385	1,285	34,080	349,337	5,289	245	3,062	16.2
2000	385	1,891	35,404	371,215	5,574	243	2,902	16.2
<i>Average annual percentage change</i>								
1971–2000	^a	1.7%	2.7%	3.4%	3.6%	0.9%	^a	^a
1990–2000	1.9%	0.1%	0.7%	2.1%	-0.8%	-1.2%	1.1%	0.3%

Source:

1971–83- Association of American Railroads, Economics and Finance Department, *Statistics of Class I Railroads*, Washington, DC, and annual.

1984–88- Association of American Railroads, *Railroad Facts*, 1988 Edition, Washington, DC, December 1989, p. 61, and annual.

1989–93- Personal communication with the Corporate Accounting Office of Amtrak, Washington, D.C.

1994–2000 - Number of locomotives in service, number of passenger cars, train-miles, car-miles, revenue passenger-miles, and average trip length - Association of American Railroads, *Railroad Facts*, 2001 Edition, Washington, DC, 2002, p. 77.

Energy use - Personal communication with the Amtrak, Washington, DC.

(Additional resources: www.amtrak.com, www.aar.org)

^a Data are not available.

^b Energy use for 1994 on is not directly comparable to earlier years. Some commuter rail energy use may have been inadvertently included in earlier years.



Commuter rail, which is also known as regional rail or suburban rail, is long-haul rail passenger service operating between metropolitan and suburban areas, whether within or across state lines. Commuter rail lines usually have reduced fares for multiple rides and commutation tickets for regular, recurring riders.

Table 12.12
Summary Statistics for Commuter Rail Operations, 1984–2000

Year	Number of passenger vehicles	Vehicle- miles (millions)	Passenger trips (millions)	Passenger- miles (millions)	Average trip length (miles)	Energy intensity (Btu/ passenger- mile)	Energy use (trillion Btu)
1984	4,075	167.9	267	6,207	23.2	3,011	18.7
1985	4,035	182.7	275	6,534	23.8	3,053	20.0
1986	4,440	188.6	306	6,723	22.0	3,174	21.3
1987	4,686	188.9	311	6,818	21.9	3,043	20.7
1988	4,649	202.2	325	6,964	21.4	3,075	21.4
1989	4,472	209.6	330	7,211	21.9	3,120	22.5
1990	4,415	212.7	328	7,082	21.6	3,068	21.7
1991	4,370	214.9	318	7,344	23.1	3,011	22.1
1992	4,413	218.8	314	7,320	23.3	2,848	20.8
1993	4,494	223.9	322	6,940	21.6	3,222	22.4
1994	4,517	230.8	339	7,996	23.6	2,904	23.2
1995	4,565	237.7	344	8,244	24.0	2,849	23.5
1996	4,665	241.9	352	8,351	23.7	2,796	23.3
1997	4,943	250.7	357	8,038	22.5	2,949	23.7
1998	4,963	259.5	381	8,704	22.8	2,859	24.9
1999	4,883	265.9	396	8,766	22.1	2,929	25.7
2000	5,073	270.9	413	9,402	22.8	2,759	25.9
<i>Average annual percentage change</i>							
1984–2000	1.4%	3.0%	2.8%	2.6%	-0.1%	-0.5%	2.1%
1990–2000	1.4%	2.4%	2.3%	2.9%	0.5%	-1.1%	-20.8%

Source:

American Public Transportation Association, *2002 Public Transportation Fact Book*, Washington, DC, February 2002, pp. 66, 70, 78, 83, 112, 114.



This table on transit rail operations includes data on light rail and heavy rail systems. Light rail vehicles are usually single vehicles driven electrically with power drawn from overhead wires. Heavy rail is characterized by high speed and rapid acceleration of rail cars operating on a separate right-of-way.

Table 12.13
Summary Statistics for Rail Transit Operations, 1970–2000^a

Year	Number of passenger vehicles	Vehicle-miles (millions)	Passenger trips (millions) ^b	Passenger-miles (millions) ^c	Average trip length (miles) ^d	Energy intensity (Btu/passenger-mile) ^e	Energy use (trillion Btu)
1970	10,548	440.8	2,116	12,273	^f	2,453	30.1
1975	10,617	446.9	1,797	10,423	^f	2,962	31.1
1980	10,654	402.2	2,241	10,939	4.9	3,008	32.9
1981	10,824	436.6	2,217	10,590	4.8	2,946	31.2
1982	10,831	445.2	2,201	10,428	4.7	3,069	32.0
1983	10,904	423.5	2,304	10,741	4.7	3,212	34.5
1984	10,848	452.7	2,388	10,531	4.4	3,732	39.3
1985	11,109	467.8	2,422	10,777	4.4	3,461	37.3
1986	11,083	492.8	2,467	11,018	4.5	3,531	38.9
1987	10,934	508.6	2,535	11,603	4.6	3,534	41.0
1988	11,370	538.3	2,462	11,836	4.8	3,565	42.2
1989	11,261	553.4	2,704	12,539	4.6	3,397	42.6
1990	11,332	560.9	2,521	12,046	4.8	3,453	41.6
1991	11,426	554.8	2,356	11,190	4.7	3,727	41.7
1992	11,303	554.0	2,395	11,438	4.8	3,575	40.9
1993	11,286	549.8	2,234	10,936	4.9	3,687	42.2
1994	11,192	565.8	2,453	11,501	4.7	3,828	44.0
1995	11,156	571.8	2,284	11,419	5.0	3,818	43.6
1996	11,341	580.7	2,418	12,487	5.2	3,444	43.0
1997	11,471	598.9	2,692	13,091	4.9	3,253	42.6
1998	11,521	609.5	2,669	13,412	5.0	3,216	43.1
1999	11,603	626.4	2,813	14,108	5.0	3,168	44.7
2000	12,168	648.0	2,952	15,200	5.1	3,105	47.2
<i>Average annual percentage change</i>							
1970–2000	0.5%	1.3%	1.1%	0.7%	0.2% ^g	0.8%	1.5%
1990–2000	0.7%	1.5%	0.6%	2.4%	0.6%	-1.1%	1.3%

Source:

American Public Transit Association, *2002 Public Transportation Fact Book*, Washington, DC, February 2002, pp. 69, 70, 78, 83.

(Additional resources: www.apta.com)

Energy use - See Appendix A for Rail Transit Energy Use.

^aHeavy rail and light rail. Series not continuous between 1983 and 1984 because of a change in data source by the American Public Transit Association (APTA). Beginning in 1984, data provided by APTA are taken from mandatory reports filed with the Urban Mass Transit Administration (UMTA). Data for prior years were provided on a voluntary basis by APTA members and expanded statistically.

^b1970–79 data represents total passenger rides; after 1979, data represents unlinked passenger trips.

^cEstimated for years 1970–76 based on an average trip length of 5.8 miles.

^dCalculated as the ratio of passenger-miles to passenger trips.

^eLarge system-to-system variations exist within this category.

^fData are not available.

^gAverage annual percentage change is calculated for years 1980–2000.

